

CYBERCRIMINAL UNDERGROUND ECONOMY SERIES

# The Brazilian Underground Market

The Market for Cybercriminal Wannabes?

Fernando Mercês

Forward-Looking Threat Research Team



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# CYBERCRIMINAL UNDERGROUND ECONOMY SERIES

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Places in the Internet where cybercriminals converge to sell and buy different products and services exist. Instead of creating their own attack tools from scratch, they can instead purchase what they need from peers who offer competitive prices. Like any other market, the laws of supply and demand dictate prices and feature offerings. But what's more interesting to note is that recently, prices have been going down.

Over the years, we have been keeping tabs on major developments in the cybercriminal underground in an effort to stay true to our mission—to make the world safe for the exchange of digital information. Constant monitoring of cybercriminal activities for years has allowed us to gather intelligence to characterize the more advanced markets we have seen so far and come up with comprehensive lists of offerings in them.

In 2012, we published “Russian Underground 101 [1],” which showcased what the Russian cybercriminal underground market had to offer. That same year, we worked with the University of California Institute of Global Conflict and Cooperation to publish “Investigating China’s Online Underground Economy [2],” which featured the Chinese cybercriminal underground. Last year,

we revisited the Chinese underground and published “Beyond Online Gaming: Revisiting the Chinese Underground Market [3].” We learned then that every country’s or region’s underground market had distinct characteristics. So this year, we will add another market to our growing list, that of Brazil.

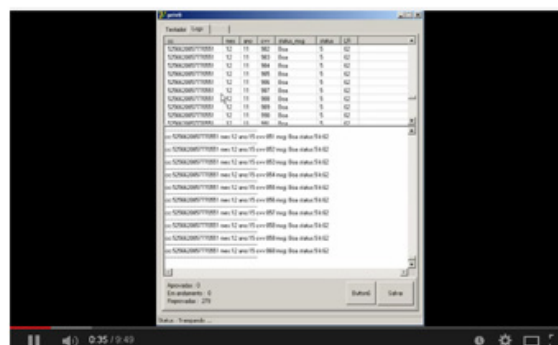
The barriers to launching cybercrime have decreased. Toolkits are becoming more available and cheaper; some are even offered free of charge. Prices are lower and features are richer. Underground forums are thriving worldwide, particularly in Russia, China, and Brazil. These have become popular means to sell products and services to cybercriminals in the said countries. Cybercriminals are also making use of the Deep Web to sell products and services outside the indexed or searchable World Wide Web, making their online “shops” harder for law enforcement to find and take down.

All of these developments mean that the computing public is at risk of being victimized more than ever and must completely reconsider how big a part security should play in their everyday computing behaviors.

# INTRODUCTION

Cybercrime in Brazil continues to mature despite the lack of huge developments in tools and tactics. This could be attributed to the fact that online banking in the country accounted for 41% of the total number of transactions and mobile banking recorded an average exponential growth rate of 270% per year from 2009 to 2013 [4]. Mobile banking accounted for 6% of the total number of transactions in 2013.

Like the Chinese and Russian underground markets, Brazil's also has its own unique characteristics. While Russian and Chinese cybercriminals hide in the deep recesses of the Web and use tools that ordinary users do not such as Internet Relay Chat (IRC) channels, Brazilian cybercrooks use more popular means to commit fraud. Even though the platforms they use such as Facebook, YouTube, Twitter, Skype, and WhatsApp seem more traceable, they appear more effective. Their owners value user privacy and so do not succumb as easily to external pressure, making investigators' task of going after cybercriminals tougher to perform.



Testador de InfoCC - Delphi + Cielo | Em funcionamento..  
Buscando a CVV.



Vendas de InfoCC ONLINE! (cash)  
Venda de crypter FUD  
Largado Curtindo uns Firme não te! Faça role com Source de Testador de logins smtp (hotmail gmail e ta)

*Sample underground-market-related posts and contacts on YouTube, Facebook, and Skype*

Cybercriminal use of underground lingo and local terms such as the following probably also helps, especially since most of the

market's customers are locals:

- **au3:** Autolt [5] v3—a BASIC-like scripting language designed to automate Windows graphical user interface (GUI) and general scripting.
- **Bankers:** Banking Trojans or their creators.
- **Boleto:** Payment slip.
- **Carders:** Cybercriminals involved in credit-card-related fraud.
- **CPF:** Official ID number given to each Brazilian citizen.
- **Droppers:** People cybercriminals pay to receive illegally purchased goods. They act as middlemen between sellers and actual buyers.
- **InfoCC:** Credit card information.
- **InfoCC full:** Validated credit card information with security codes.
- **InfoCC geradas:** Credit card information without security codes.
- **KL:** Keylogger.
- **Testador:** Portuguese word for “tester,” an application used to validate credit card numbers.

The Brazilian underground has players that sell number generators and checkers or testers for more than just credit cards. They also offer tools that were specifically created for attacks against products and services only available in Brazil. The Brazilian underground is also the only market that offers training services for cybercriminal wannabes.

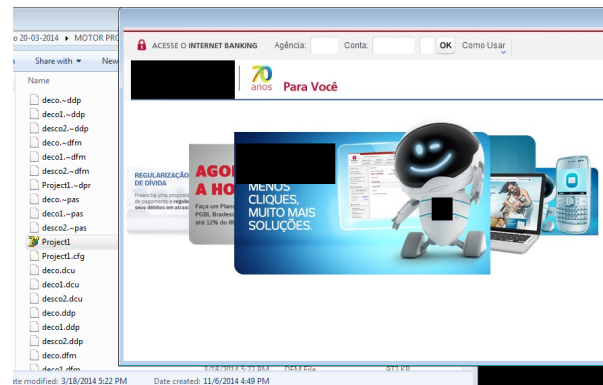
# THE UNDERGROUND MARKET SCENE

## Product Offerings

### BANKING TROJANS

For several years, Brazil has been known for banking Trojans [6]. Many banking Trojans were created in Brazil or by Brazilians and target Brazilian banking customers. These use various techniques to steal victims' credentials such as:

- **Bolware use:** The Brazilian Federation of Banks (FEBRABAN) allows the use of so-called "boletos [7]" for payment. These boletos use bar codes to track payments made, which cybercriminals have started abusing with threats known as "bolware." Bolware refer to malware that change the bar codes on boletos so payments end up in attackers' hands instead of with legitimate sellers.
- **Domain Name System (DNS) poisoning:** Changing DNS records to redirect users to malicious websites.
- **Fake browser window use:** Using malicious browser windows that appear on top of legitimate ones to steal information keyed into them.



*Sample fake browser window for a Brazilian bank found in a Trojan's source code*

- **Malicious browser extension [8] use:** Some browser extensions, when installed, capture personal data that they then send to attackers.
- **Malicious proxy, including proxy auto-config (PAC) [9] script, use:** Configuring victims' browser proxy settings to redirect them to malicious websites.

Full-featured banking Trojan builders used to create malware that can obtain account credentials for the five biggest banks in Brazil cost R\$1,000 (US\$386)<sup>1</sup> each. Bolware kits or toolkits used to create bolware, meanwhile, cost around R\$400 (US\$155). Both have control panels for monitoring and managing infections and malicious activities.

<sup>1</sup> All U.S. dollar amounts of the products and services featured in this paper are based on November 10, 2014 foreign currency exchange rates.



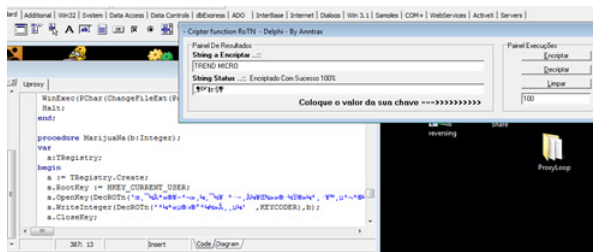
```

1077 end
1078 else if (dado = '(LEFT)') then
1079 begin
1080 // AutoClicker.Enabled := false;
1081 SendMessage(FClient.BrowserHND, WM_KEYDOWN, VK_LEFT, 0) //Simula o pressionamento da tecla com a seta para baixo
1082 Sleep(100) //Espera 0.1 segundos
1083 SendMessage(FClient.BrowserHND, WM_KEYUP, VK_LEFT, 0) //Simula a liberação da tecla com a seta para baixo
1084 end
1085 else if (dado = '(RIGHT)') then
1086 begin
1087 // AutoClicker.Enabled := false;
1088 SendMessage(FClient.BrowserHND, WM_KEYDOWN, VK_RIGHT, 0) //Simula o pressionamento da tecla com a seta para baixo
1089 Sleep(100) //Espera 0.1 segundos
1090 SendMessage(FClient.BrowserHND, WM_KEYUP, VK_RIGHT, 0) //Simula a liberação da tecla com a seta para baixo
1091 end
1092 else if (dado = '(DEL)') then
1093 begin
1094 SendMessage(FClient.BrowserHND, WM_KEYDOWN, VK_DELETE, 0) //Simula o pressionamento da tecla DELETE
1095 SendMessage(FClient.BrowserHND, WM_KEYUP, VK_DELETE, 0) //Simula o pressionamento da tecla DELETE
1096 end
1097 else if (dado = '(TAB)') then
1098 begin
1099 SendMessage(FClient.BrowserHND, WM_KEYDOWN, VK_TAB, 0) //Simula o pressionamento da tecla TAB
1100 SendMessage(FClient.BrowserHND, WM_KEYUP, VK_TAB, 0) //Simula o pressionamento da tecla TAB
1101 end
1102 else if (FChar(dado) = 'F') or (dado = '(F5)') then

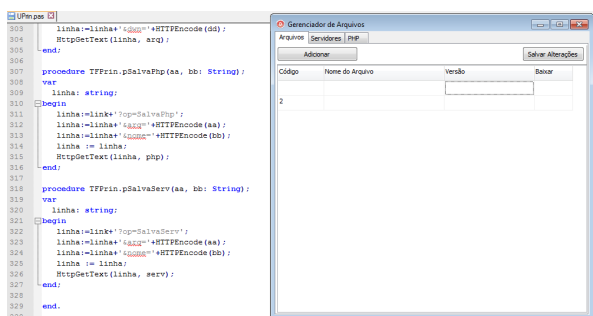
```

*Snippet from a source code that monitors key events to steal online banking credentials*

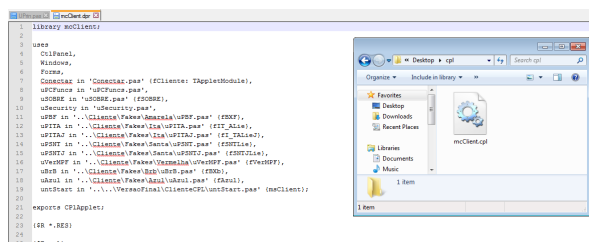
Apart from toolkits, banking Trojan source codes are also sold for around R\$1,000 (US\$386) each. They are more expensive than builders but allow cybercriminals to more freely modify their malware. They can obfuscate strings, select the best packers for their malicious executable files, and find the best crypters or programs that conceal the malicious nature of files—all to better evade detection and removal.



*Sample source code on which an ROT algorithm was used to obfuscate strings*

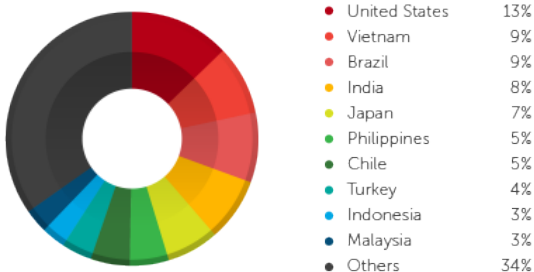


*Sample banking Trojan auto-update module that uses the Delphi and PHP languages to work*



*Sample banking Trojan source code written in Delphi using the Control Panel (.CPL) file format [10]*

Brazil ranks second worldwide in terms of online banking malware infection count in the third quarter of 2014. It accounts for almost 9% of the total number of online-banking-malware-infected systems across the world.



*Brazil accounts for almost 9% of the total number of online-banking-malware-infected systems worldwide*

## BUSINESS APPLICATION ACCOUNT CREDENTIALS

As in any underground market, confidential data is a valuable commodity in Brazil. Unlike in other markets though, cybercriminals in Brazil sell credentials for popular online business application services provided by Unitfour [11] and Serasa Experian [12].

Unitfour offers an online marketing service called "InTouch [13]" that allows users to easily stay in touch with their customers by

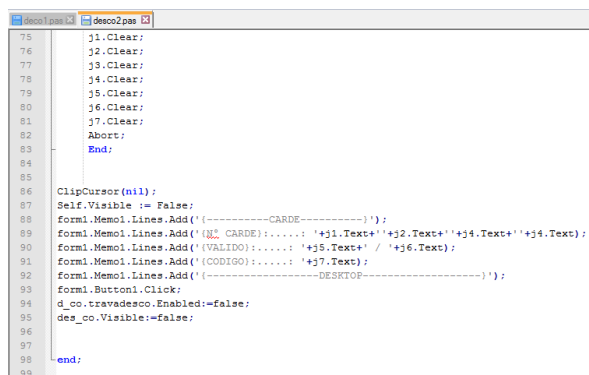


keeping all of their information in a single app. InTouch users can keep and access their potential or existing customers' full names, home addresses, ID numbers, phone numbers, and more. The amount of personally identifiable information (PII) that InTouch has access to probably attracted cybercriminal attention, hence the availability of InTouch accounts that allow 2,000 queries underground for R\$400 (US\$155) each. Obtaining such information allows buyers to use accounts that are harder to trace back to them. They can use these hard-to-trace accounts to register malicious domains, distribute malware, hire hackers, spam victims, buy tools and other crimeware, and engage in other fraudulent activities.

Cybercriminals also steal and sell Serasa Experian accounts for R\$500 (US\$193) each to peers underground. Customers use these to keep track of those who owe them money for either products or services. Similar to InTouch, Serasa Experian keeps plenty of PII that cybercriminals can use for nefarious purposes.

### CREDIT CARD CREDENTIALS

Brazilian cybercriminals charge an average of R\$80 (US\$31) for each valid credit card number. Hundreds of valid credit card numbers were discovered for sale, prices for which depend on credit limit amounts. Special packages were also seen such as 20 valid credit card numbers with limits ranging from R\$1,000 (US\$386) to R\$2,500 (US\$966) for R\$700 (US\$270).



```

75  j1.Clear;
76  j2.Clear;
77  j3.Clear;
78  j4.Clear;
79  j5.Clear;
80  j6.Clear;
81  j7.Clear;
82  Abort;
83  End;
84
85
86  ClipCursor(nil);
87  Self.Visible := False;
88  form1.Memori.Lines.Add('-----CARDE-----');
89  form1.Memori.Lines.Add('Nº CARDE:.....: '+j1.Text+'*'+j2.Text+'*'+j3.Text+'*'+j4.Text);
90  form1.Memori.Lines.Add('VALIDO:.....: '+j5.Text+' / '+j6.Text);
91  form1.Memori.Lines.Add('CODIGO:.....: '+j7.Text);
92  form1.Memori.Lines.Add('-----DESKTOP-----');
93  form1.Button1.Click;
94  d_co.travadesco.Enabled:=false;
95  des_co.Visible:=false;
96
97
98
99  end;

```

*Snippet from a source code that sends stolen credit card credentials to cybercriminals*

### CREDIT CARD NUMBER CHECKERS

Although most online stores in Brazil require customers to key in additional information such as their address and CPF number [14] to complete purchases, some do not. Knowing this, carders started creating and selling credit card number checkers or testers. These programs require a credit card number list as input and attempt to debit small amounts (R\$1–10 or US\$0.39–4) to the cards to see if they work. The numbers of the credit cards that worked are then declared “valid” and ready for illegal transaction use. These are then automatically saved in a .TXT file that can be sold to interested buyers underground.



*Sample credit card number checker user interface (UI)*

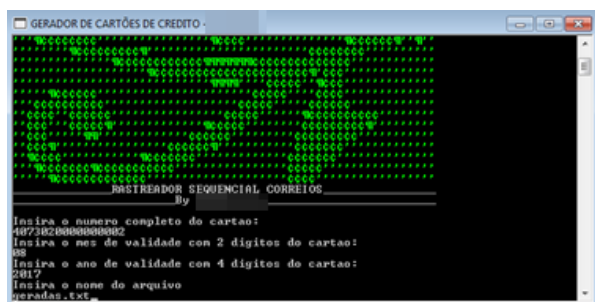
Credit card number checkers or testers can come with other interesting features such as:

- **Internet authentication:** Additional service that paid users can obtain. Credit card number checkers require authentication that users can obtain from the program creators' servers.
- **Auto-update:** Users of credit card number checkers or testers automatically get updates so they can enjoy the software's latest versions with improvements and new features.

Most of the credit card checkers were available for free underground. The samples analyzed appear to steal from criminal users. The program creators log test results and use the validated card numbers for their own gain before they send a copy to their customers. This is probably why credit card number checkers can afford to give away their programs for free; they get to use the validated card numbers for their own gain before their customers can.

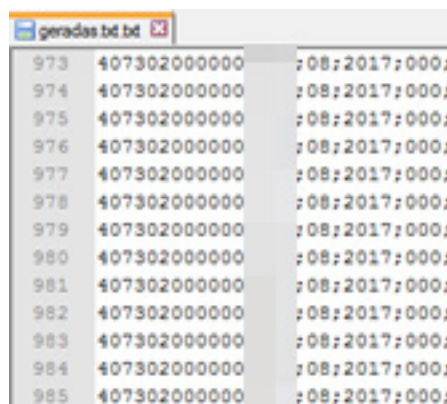
## CREDIT CARD NUMBER GENERATORS

Experienced cybercriminals know the algorithms that companies such as Visa and American Express use to generate credit card numbers. In fact, they incorporate such algorithms in commonly available and free computer programs to make names for themselves underground.



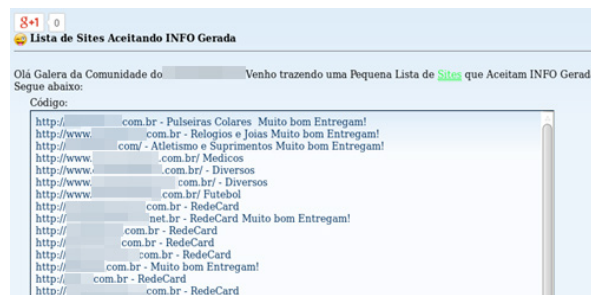
*Sample program that generates sets of credit card numbers*

These programs can generate approximately 1,000 credit card numbers per run following the format most card issuers use. The text files that result from number generation list down the 16-digit credit card numbers with their corresponding expiry month and year.



*Sample .TXT file result from a credit card number generator*

Note that even though the credit card numbers are mathematically valid, they cannot always be used to make online store purchases. In fact, statistically, most of them will be invalid. But because some online stores in Brazil allow purchasing goods with credit cards without requiring security codes, the credit card generators work for their purposes. A list of 38 online stores that allow credit card purchases without requiring security codes was also recently discovered in an underground forum.



*Sample list of 38 online stores in Brazil that accept credit card payments without requiring security codes*

## CRYPTERS

Security solutions heuristic engines can detect most banking Trojans, botnets, and malware, in general. Cybercriminals know this and so spend a significant amount of effort to develop and use crypters for their malware to better evade detection. Crypters that can prevent all security products from detecting malware are considered “100% fully undetectable (FUD).” If they can only evade several security solutions, they are only sold as “partial” crypters.

Crypters use several techniques to evade detection such as:

- **Code splicing:** Moving some instructions in the final executable code’s entry point (EP)—the beginning of the code—to another location.
- **EP modification:** Changing an executable file’s EP from one location to another so the code is read from the new location.
- **Executable binding:** Attaching an executable file to the end of another.
- **General file modification:** Performing minor byte-level changes, section additions, header changes, and others to modify file hashes.



Sample crypter sold underground

Crypters are designed to keep malware functionality intact despite changes to the

executable file so this can evade detection. A FUD crypter license costs as little as R\$50 (US\$19) a month. FUD crypters with additional features are also available for R\$75–100 (US\$29–39) for a month-long license. The more features they come with, the more expensive they are. Partial crypters are usually sold for half the cost of FUD crypters (R\$25 or US\$10).



Sample underground market ad for crypters

## SOCIAL MEDIA FOLLOWERS

Social media play a big role not just in the Brazilian cybercriminal underground but also in practically everyone’s online life. This is probably why underground market sellers offer free followers for R\$20–125 (US\$8–49) to anyone interested.

Mais anúncios deste vendedor



Seguidores Instagram

R\$ 20<sup>00</sup>



Vizualizações Para Seu Video - Youtube

R\$ 20<sup>00</sup>



5 Mil Seguidores Instagram - Entrega Em 24

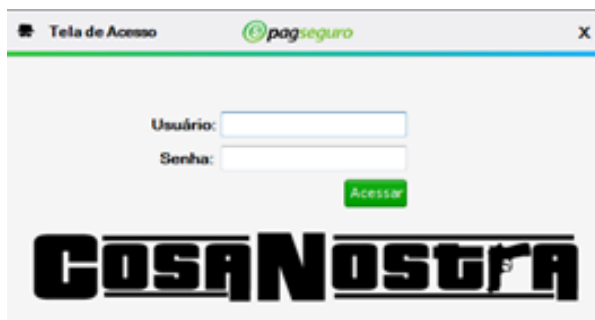
R\$ 90<sup>00</sup>

Sample ad for free followers for Instagram and YouTube

## ONLINE SERVICE ACCOUNT CREDENTIAL CHECKERS

Apart from credit card number checkers or testers, tools that can validate account numbers for other online services are also

available underground for R\$50 (US\$19) each. These use the same techniques as credit card number checkers or testers. An example of this is an account checker or tester for PagSeguro [15]—a PayPal-like service in Brazil.



Sample PagSeguro account checker or tester

To use these checkers or testers, cybercriminals need to first obtain log-in information via phishing campaigns.

## PHISHING PAGES

Cybercriminals who know how to use Web programming languages such as PHP offer peers phished versions of Cielo, Banco do Brasil, Itaú Unibanco, Caixa Econômica Federal, and other financial institutions' Web pages.



Sample fake Cielo page

Phishing pages sold for around R\$100 (US\$39) each underground can do the following and more:

- Steal personal data such as CPF, CNPJ [16], and credit card numbers
- Show error messages and redirect to their legitimate counterparts
- Send stolen information via email

Creating phishing pages is simple—cybercriminals just copy everything on the legitimate pages they wish to phish and change the destination the data collected go to, typically to a free webmail account that they own. The victims are then redirected to the legitimate websites without noticing the trickery.

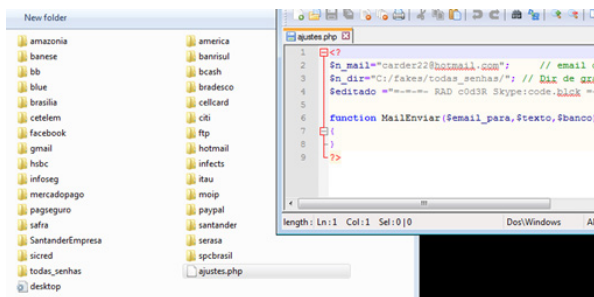
The following table lists the top 10 phished websites in Brazil.

Top 10 Phished Websites	
Institution Phished	Share
Banco do Brasil	31%
Banco Bradesco	24%
Itaú Unibanco	18%
Santander	11%



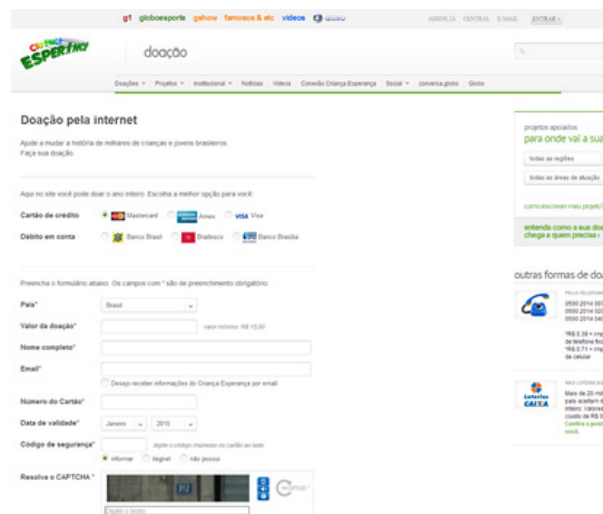
Top 10 Phished Websites	
Institution Phished	Share
Cielo	6%
Caixa	2%
HSBC	1%
MasterCard	1%
TAM Airlines	1%
Casas Bahia	1%
Others	4%

A single server can host several phishing pages for different products or services. A single actor can purchase several pages, including those of social media, banks, and retailers.



Sample phishers' folder with several phishing pages

Cybercriminals create fake versions of any page that can help them steal account credentials or money. Even charitable institutions' websites are not safe.



*Fake version of the page of a very popular charity in Brazil—Criança Esperança (Child Hope)*

## PHONE NUMBER LISTS

The cybercriminals who usually sell spamming software and hardware also offer

phone number lists per town or city. A mobile phone number list for a small town can be bought at R\$750 (US\$290) while one for a big city such as São Paulo can cost as much as R\$3,200 (US\$1,236).

Estado	Celulares s6 2012		Celulares 2011/2012		Capitais			
	s6 2012	R\$ (s6 2012)	Tot. 2011/2012	R\$ 2011/2012	Capital	s6 2012	2011/2012	(1) Total 2011/2012
AC	589.883	850			1400	Rio Branco	151.317	790
AL	558.714	1700			2000	Maceio	387.344	1350
AM	758.170	1900			2170	Manaus	683.826	1830
AP	153.685	700			1220	Macapa	125.855	600
BA	3.395.891	2500			2800	Salvador	1.595.421	2150
CE	1.545.036	2200			2300	Fortaleza	1.072.483	2100
DF	1.874.472	2250			2600	Brasilia	809.110	1950
ES	1.987.831	2300			2700	Vitoria	421.416	1400
GO	2.205.538	2350			2850	Goiânia	877.936	2020
MA	594.647	1750			2130	São Luis	362.352	1350
MG	6.428.596	2950			3040	Belo Horizonte	1.229.484	2050
MS	1.172.217	2150			2450	Campo Grande	623.987	1775
MT	1.174.552	2150			2450	Cuiabá	434.923	1450
PA	1.826.749	2100			2350	Belém	481.731	1450
PB	708.372	1850			2050	João Pessoa	397.171	1400
PE	2.212.324	2350			2450	Recife	1.050.583	2100
PI	452.367	1500			1720	Teresina	311.812	1220
PR	4.270.240	2700			2850	Curitiba	1.227.757	2100
RJ	10.292.150	3200			3300	Rio de Janeiro	3.943.897	2650
RN	756.787	1900			2100	Natal	452.840	1500
RO	441.683	1450			2020	Porto Velho	225.789	1000
RR	187.405	500			1050	Boa Vista	100.775	500
RS	6.548.755	2950			3060	Porto Alegre	1.483.165	2140
SC	2.577.908	2400			2700	Florianópolis	318.111	1220
SE	699.523	1850			2140	Aracaju	449.151	1500
SP	23.791.814	3600			3950	São Paulo	18.864.876	3200
TO	345.590	1300			1550	Palmas	126.287	600
Total	76.177.821	4900			6000	Total capitais	30.208.591	5000*

Sample mobile phone number list sold underground

Home phone number lists used for phone-based scams and filling in online forms with stolen details are also available at prices ranging from R\$820 (US\$317) to R\$5,000 (US\$1,931).

## SMS-SPAMMING SOFTWARE

Various kinds of SMS-spamming software are sold underground, depending on the language used to write them. An application written in Microsoft™ Visual Basic® with support for the latest Windows® versions as of August 14, 2014 and a lifetime license was sold for R\$499 (US\$193). This can be used to send an unlimited number of SMS spam but requires a 3G modem that can be shipped to their preferred mailing addresses for R\$130 (US\$50).



Sample SMS-spamming software UI

The following table shows the various products sold in the Brazilian underground market with their respective prices.

Brazilian Underground Market Product Offerings		
Product	Details	Prices
Banking Trojans	<ul style="list-style-type: none"> <li>Builder</li> <li>Source code</li> </ul>	<ul style="list-style-type: none"> <li>R\$1,000 (US\$386)</li> <li>R\$1,000 (US\$386)</li> </ul>
Bolware kits	Contain bolware for various institutions that accept boletos as payment	R\$400 (US\$155)
Business application account credentials	<ul style="list-style-type: none"> <li>Unitfour's InTouch</li> <li>Serasa Experian</li> </ul>	<ul style="list-style-type: none"> <li>R\$400 (US\$155)</li> <li>R\$500 (US\$193)</li> </ul>

Brazilian Underground Market Product Offerings		
Product	Details	Prices
Credit card credentials	Credit limit: <ul style="list-style-type: none"> <li>• R\$1,000 (US\$399)</li> <li>• R\$2,000 (US\$798)</li> <li>• R\$3,000 (US\$1,197)</li> <li>• R\$3,001–8,000 (US\$1,198–3,192)</li> <li>• R\$8,001+ (US\$3,193+)</li> </ul>	Per set of credentials: <ul style="list-style-type: none"> <li>• R\$90 (US\$35)</li> <li>• R\$100 (US\$39)</li> <li>• R\$130 (US\$50)</li> <li>• R\$150 (US\$58)</li> <li>• R\$350+ (US\$135+)</li> </ul>
Credit card number generators	Generate 1,000 numbers per run with expiry month and year	Free
Crypters	<ul style="list-style-type: none"> <li>• Partial</li> <li>• FUD</li> <li>• FUD with delay and icon-changer features</li> <li>• FUD with delay, icon-changer, and binder features</li> </ul>	<ul style="list-style-type: none"> <li>• R\$25 (US\$10)</li> <li>• R\$50 (US\$19)</li> <li>• R\$75 (US\$29)</li> <li>• R\$100 (US\$39)</li> </ul>
Online service account credentials	<ul style="list-style-type: none"> <li>• PagSeguro</li> <li>• MercadoLibre</li> <li>• eBay</li> </ul>	<ul style="list-style-type: none"> <li>• R\$50 (US\$19)</li> <li>• R\$50 (US\$19)</li> <li>• R\$50 (US\$19)</li> </ul>
Phishing pages	For popular banks and other financial service providers	R\$100 (US\$39)
Phone number lists	Mobile <ul style="list-style-type: none"> <li>• Small town</li> <li>• Big city</li> </ul> Home (landline) <ul style="list-style-type: none"> <li>• Small town</li> <li>• Big city</li> </ul>	<ul style="list-style-type: none"> <li>• R\$750 (US\$290)</li> <li>• R\$3,200 (US\$1,236)</li> <li>• R\$820 (US\$317)</li> <li>• R\$5,000 (US\$1,931)</li> </ul>
Social media followers/views/likes	Facebook <ul style="list-style-type: none"> <li>• 1,000 likes</li> <li>• 2,000 likes</li> <li>• 5,000 likes</li> <li>• 10,000 likes</li> </ul> Instagram <ul style="list-style-type: none"> <li>• 5,000 followers</li> </ul> Twitter <ul style="list-style-type: none"> <li>• 1,000 followers</li> </ul> YouTube <ul style="list-style-type: none"> <li>• 200 subscribers</li> <li>• 1,000 views</li> <li>• 5,000 views</li> <li>• 10,000 views</li> </ul>	<ul style="list-style-type: none"> <li>• R\$24.90 (US\$9)</li> <li>• R\$39.90 (US\$16)</li> <li>• R\$99.90 (US\$39)</li> <li>• R\$159.90 (US\$62)</li> <li>• R\$90 (US\$35)</li> <li>• R\$20 (US\$8)</li> <li>• R\$20 (US\$8)</li> <li>• R\$20 (US\$8)</li> <li>• R\$60 (US\$23)</li> <li>• R\$125 (US\$49)</li> </ul>



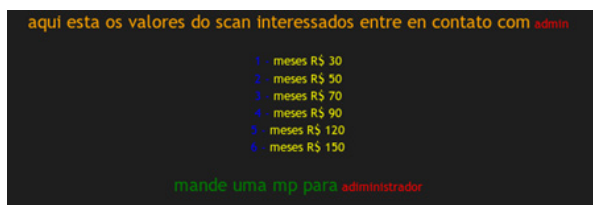
Brazilian Underground Market Product Offerings		
Product	Details	Prices
SMS-spamming 3G modem	Including shipping fee	R\$130 (US\$50)
SMS-spamming software	Written in Visual Basic and works on all versions of Windows	R\$499 (US\$193)

The product list in the table above is by no means exhaustive. Several other products are sold in the Brazilian underground market.

## Service Offerings

### MALWARE CHECKING AGAINST SECURITY SOFTWARE SERVICES

Cybercrime does not stop at creating malware though. Cybercriminals also need to ensure that their malicious creations will not be detected by security solutions when used. Experienced fraudsters rarely use publicly available file scanners because these usually send scanned files to security companies for detection.



*Sample malware-checking services offered underground*

Cybercriminals offer malware-checking services for as little as R\$30 (US\$12) for one month to as much as R\$150 (US\$58) for six months.

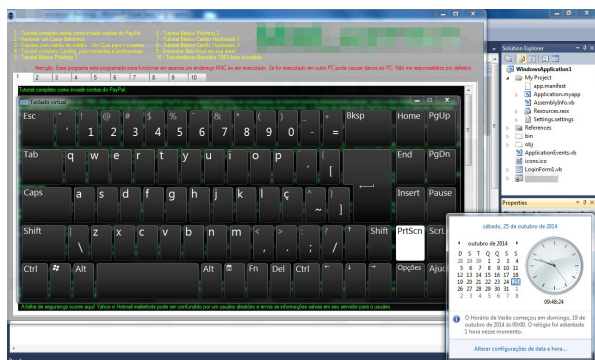
### SMS-SPAMMING SERVICES

Some spammers outsource spam sending at prices ranging from R\$400 (US\$155) for 5,000 text messages to R\$3,000 (US\$1,159) for 100,000 messages.

### TRAINING SERVICES

What distinguishes the Brazilian underground from others is the fact that it also offers training services for cybercriminal wannabes. Cybercriminals in Brazil particularly offer FUD crypter programming and fraud training by selling how-to videos and providing support services via Skype. Anyone who is Internet savvy and has basic computing knowledge and skill can avail of training services to become cybercriminals. How-to videos and forums where they can exchange information with peers abound underground. Several trainers offer services as well. They even offer support when training ends.

Apart from how-to videos, some cybercrime experts from Brazil offer hands-on training on the Deep Web as well.



Sample training courses available on the Deep Web

### Crypter-Programming Training

For a small sum of R\$120 (US\$46), one service provider claims he can train customers to create FUD remote access tools (RATs) the likes of njrat [16] or SpyGate [17] RAT. This particular provider also offers support and lifetime updates and can be contacted via Skype.



Sample ad for FUD-crypter-programming training

### Fraud Training

Probably the most popular course among cybercriminal wannabes is related to committing bank fraud. Beginners first learn the fraud workflow. They are then taught how to obtain the required tools and everything else they need to know to start stealing for R\$1,499 (US\$579).

Another 10-module fraud training course on practically everything cybercriminal wannabes need to know to start their digital fraud career with the aid of interactive guides and practical exercises (e.g., simulating attacks) is also offered for R\$1,200 (US\$468).



Sample ad for fraud training

The following table shows the various services offered in the Brazilian underground market with their respective prices.

Brazilian Underground Market Service Offerings		
Service	Details	Prices
Malware checking against security software services	Duration: <ul style="list-style-type: none"> <li>1 month</li> <li>2 months</li> <li>3 months</li> <li>4 months</li> <li>5 months</li> <li>6 months</li> </ul>	<ul style="list-style-type: none"> <li>R\$30 (US\$12)</li> <li>R\$50 (US\$19)</li> <li>R\$70 (US\$27)</li> <li>R\$90 (US\$35)</li> <li>R\$120 (US\$46)</li> <li>R\$150 (US\$58)</li> </ul>

Brazilian Underground Market Service Offerings		
Service	Details	Prices
SMS-spamming services	Number of text messages: <ul style="list-style-type: none"> <li>• 5,000</li> <li>• 10,000</li> <li>• 20,000</li> <li>• 40,000</li> <li>• 50,000</li> <li>• 100,000</li> </ul>	<ul style="list-style-type: none"> <li>• R\$400 (US\$155)</li> <li>• R\$750 (US\$290)</li> <li>• R\$1,200 (US\$464)</li> <li>• R\$2,000 (US\$773)</li> <li>• R\$2,250 (US\$869)</li> <li>• R\$3,000 (US\$1,159)</li> </ul>
Training services	<ul style="list-style-type: none"> <li>• FUD-crypter programming</li> <li>• Fraud (10 modules, interactive guide, and practical exercises)</li> <li>• Fraud (with support)</li> </ul>	<ul style="list-style-type: none"> <li>• R\$120 (US\$46)</li> <li>• R\$1,200 (US\$468)</li> <li>• R\$1,499 (US\$579)</li> </ul>

The service list in the table above is by no means exhaustive. Several other services

are offered in the Brazilian underground market.

## CONCLUSION

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Brazilian cybercriminals have always been known for banking-related fraud. Although that is still true today, they have ventured into other forms of crime as well. They have added smartphones to their list of device targets, for one, as evidenced by the availability of SMS-spamming software and services.

As has been observed in both the Chinese and Russian underground markets, the prices of crimeware in Brazil decreased as well from 2011. A credit card number generator, for instance, which cost R\$400 (US\$160) in 2011, can now be obtained

free of charge. The same can be said about service offerings.

Cybercriminals, regardless of country of operation or intended target, stay abreast of developments in technology to ensure the success of their business. The Brazilian underground market offers the same products and services and even more compared with its Chinese and Russian counterparts. They also compete with other markets in terms of pricing. And, most importantly, they constantly find ways to steer clear of security researchers and law enforcers.

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Securing Your Journey  
to the Cloud

225 E. John Carpenter Freeway, Suite 1500  
Irving, Texas 75062 U.S.A.

Phone: +1.817.569,8900